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(54) Improved structure of safe bottle cap

(57) An improved structure of a safe bottle cap provides the cap with an automatic closing function, and consists of a cap 2 hingedly connected to a seat 1 and formed with a plunger 22 which is biased into engagement with a feed opening 16 by a leaf spring 3. Such a structure renders the cap normally closed, whilst permitting opening of the cap, by pressing the rear end of the cap, so that the contents in the bottle can be poured out. After use, the cap is automatically closed by releasing the pressure on the cap, so that the contents of the bottle will not be poured out in the event that the bottle is pushed over inadvertently or the bottle is accidentally dropped.

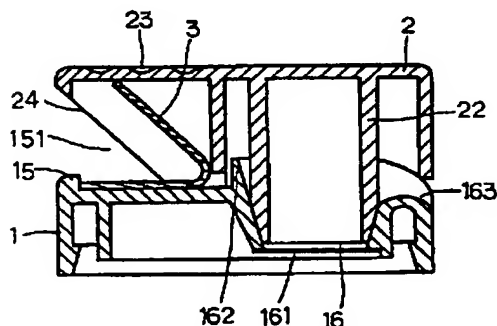


FIG. 3

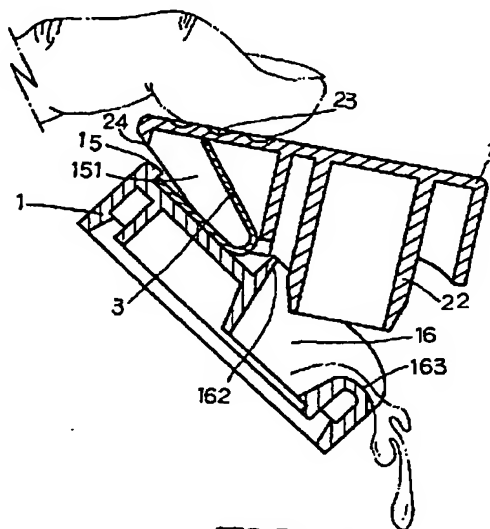


FIG. 4

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Description

The present invention relates mainly to an improved structure of a safe bottle cap, and especially to an improvement of a safe cap which is used on a bottle or a can.

A conventional bottle cap or a safe bottle cap used on a bottle or a can has presently the following advantage:

1) A widely used cap for a bottle or a can provides only a female thread on the inside wall of the cap body for rotatably locking with a male thread provided on the opening of the bottle, this combination mode of such structure is more bothersome as well as impractical in opening or closing the cap (such as shown in Fig. 5).

2) For solving the problem of a cap stated above, a safe cap is widely used nowadays in the markets, the safe cap is mainly comprised of a seat mounted on a bottle opening, on one side of the seat a cover plate is connected, between the cover plate and the seat, a hook and a recess are provided for engaging, the contents in the bottle (can) can be poured out after the cover plate is unclosed, the cover plate needs to be switched back to approach the seat, and then the hook and the recess are forced to be engaged, this may be easier to be completed than a conventional bottle cap, however, it still is unable to get the effect of convenient use, once the cap is unclosed for use, the contents therein may be poured out if the cap is not closed again immediately and happens to be pushed over (referring to Fig. 6).

In view of these, the inventor of the present invention provides the improved structure of a safe bottle cap after long term study and design for solving the problems and eliminate the disadvantage resided in the conventional bottle caps.

The principle object of the present invention is to render the body of the cap to be automatically pushed to the closed position by a restoring force of a spring sheet at the end thereof after the contents therein have been poured out during the cap opening state and when the cap is released, closing operation of the cap hence needs not to be completed by us, yet the contents will not be poured out when the bottle is pushed over.

And the present invention is characterized mainly by that: a feeding opening is provided at the front end of the seat, the seat has two end walls provided at both sides thereof, a cap receiving area is formed between these end walls, the body of the cap is set in the cap receiving area, a plunger is located under the cap and aligned with the feeding opening of the seat, further, the cap has on both sides thereof two protruding axles which are slid down from the top of a slide groove in the inner sides of the end walls of the seat to the bottom and then are inserted each in an axle hole at the bottom of each slide groove, and there is a flange provided at the rear end of

the seat and forming a spring receiving chamber with the rear end of the cap, a spring sheet is located in this spring receiving chamber.

The present invention will be apparent in its practical measures and efficiency after reading the detailed description of the preferred embodiment thereof in reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view showing the appearance of the present invention;

Fig. 2 is an anatomic perspective view of the present invention;

Fig. 3 is a lateral sectional view of the present invention;

Fig. 4 is also a lateral sectional view of the present invention showing an embodiment in operation;

Fig. 5 is an anatomic perspective view of a conventional bottle cap;

Fig. 6 is a perspective view of a conventional safe bottle cap;

Referring to the drawings, wherein Fig. 1 is a perspective view showing the appearance of the present invention, while Fig. 2 is an anatomic perspective view of the present invention. In these two drawings, a seat 1, a cap 2 and a spring sheet 3 are shown, wherein the seat 1 has two end walls 11 on both sides thereof, and two slide grooves 12 are provided one on each of the inner sides of the two end walls 11, an axle hole 13 is provided at the bottom of each slide groove 12, further, a cap receiving area 14 is formed between these end walls 11, a feeding opening 16 is provided at the front end of the cap receiving area 14, while on the other end there is a flange 15 on the periphery of the cap receiving area 14.

As shown in Fig. 2, 3, the cap 2 is located on the cap receiving area 14 of the seat 1, the cap 2 has two protruding axles 21 on both sides thereof, and a plunger 22 is located under the cap 2 and aligned with the feeding opening 16 of the seat 1, besides, an inclined surface 24 is provided at the rear end of the cap 2 and tilting downwardly, and a pressing surface 23 having a plurality of dents there-on is provided at the rear end of the upper surface of the cap 2.

And as shown in Fig. 3, 4, when the present invention is assembled, the protruding axles 21 on both sides of the cap 2 are slid down from the top of the slide grooves 12 in the inner sides of the end walls 11 to the bottom and then are inserted each in an axle hole 13 at the bottom of each slide groove 12, and the flange 15 provided at the rear end of the seat 1 forms a spring receiving chamber 151 with the rear lower end of the cap 2, a spring sheet 3 is located in this spring receiving chamber 151.

When the present invention is in use, the pressing surface 23 of the cap 2 is pressed down to press the spring sheet 3 in the spring receiving chamber 151, meantime, the protruding axles 21 or the axle holes 13 are taken as that the center line of the cap 2 is located on, thereby the cap 2 can be lifted to allow the plunger

22 under the cap 2 to get free from the feeding opening 16, and at this time, we can pour out the contents in the bottle (can), and if we want to close the cap 2, it only needs to release the hand holding the cap 2, the spring sheet 3 in the spring receiving chamber 151 can immediately push the cap 2 to the close position by its own restoring force of resiliency, and to render the plunger 22 to block the feeding opening 16, so that the contents in the bottle (can) will not be poured out when the bottle (can) is pushed over inadvertently or the bottle (can) drops accidentally when in use.

As depicted in Fig. 3, for ensuring that the liquid (such as food) in a bottle is clean and sanitary or safe for use (such as chemicals, pesticide), a platinum film 161 can be suitably provided at the feeding opening 16, so that the feeding opening 16 is sealed before use, and a sharp device can be used to break the platinum film 161, in this way, cleanliness and sanitation can be achieved.

Further as depicted in Fig. 2, for expedience of concentric pouring out of the contents in the bottle (can) but not flowing sideways or rearwardly, a protruding flange 162 is provided at the rear side of the perimeter of the feeding opening 16, and a declined arc like flow guiding edge 163 is provided at the front side thereof.

My invention may assume numerous forms and is to be construed as including all modifications and variations falling within the scope of the appended claims.

Claims

1. An improved structure of a safe bottle cap, it is characterized by
 - a feeding opening which is provided at the front end of a seat for said cap,
 - two end walls provided on both sides of said seat,
 - a cap receiving area formed between end said walls with the body of said cap being located on said cap receiving area,
 - a plunger located under said cap and aligned with said feeding opening of said seat,
 - two slide grooves provided in the inner sides of said end walls,
 - two axle holes provided at the bottom of said slide grooves,
 - two protruding axles on both sides of said cap used for sliding down from the top of said two slide grooves to the bottom and then being inserted each in one of said axle hole,
 - a flange provided at the rear end of said seat forming a spring receiving chamber with the rear lower end of said cap,
 - a spring sheet being located in said spring receiving chamber.
2. An improved structure of a safe bottle cap as stated in claim 1, wherein a concaved arc like flow guiding edge is provided at the front side of the perimeter of said feeding opening of said seat.
3. An improved structure of a safe bottle cap as stated in claim 1, wherein a platinum film is suitably provided at said feeding opening.
4. An improved structure of a safe bottle cap as stated in claim 1, wherein an inclined surface is provided at the rear end of said cap and tilts downwardly.
5. A safe bottle cap comprising a seat member (1) and a cap member (2) connected to the seat member (1) so as to be movable between an open position permitting pouring of the contents of the bottle through an opening (16) in the seat member (1) and a closed position preventing pouring of the contents of the bottle through the opening (16), characterised in that one end region of the cap member (2) is provided with a plunger (22) for closing off the opening (16) in the closed position, the opposite end region of the cap member (2) is biased away from the seat member (1) by resilient means (3), and an intermediate region of the cap member (2) is hingedly connected to the seat member (1) so that the plunger (22) is pivoted into engagement with the opening (16) to close off the opening by the action of the resilient means (3) on the cap member (2) on release of pressure applied to the cap member to hold it in the open position.

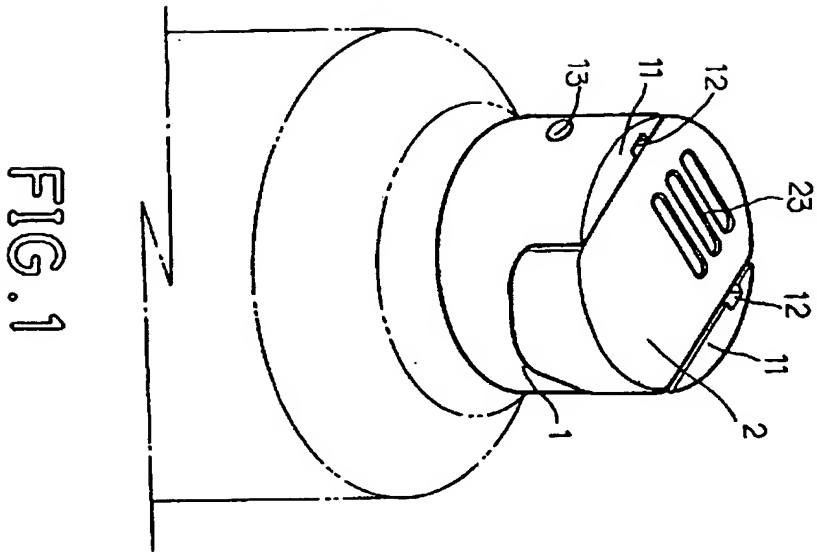


FIG. 1

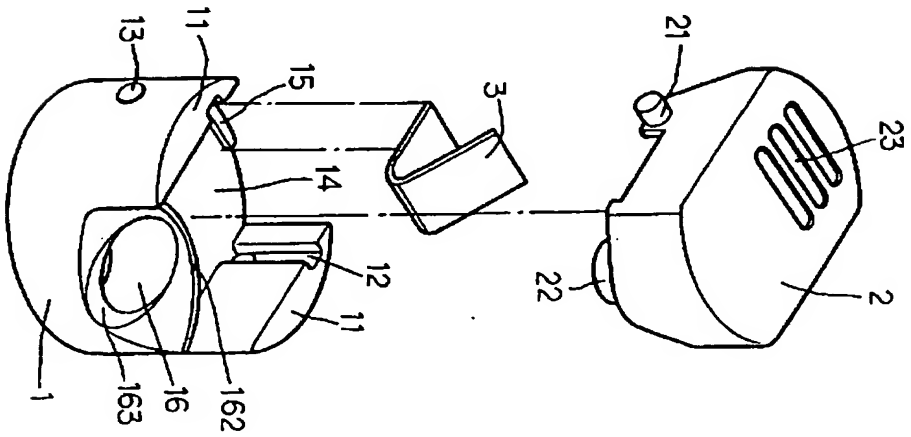
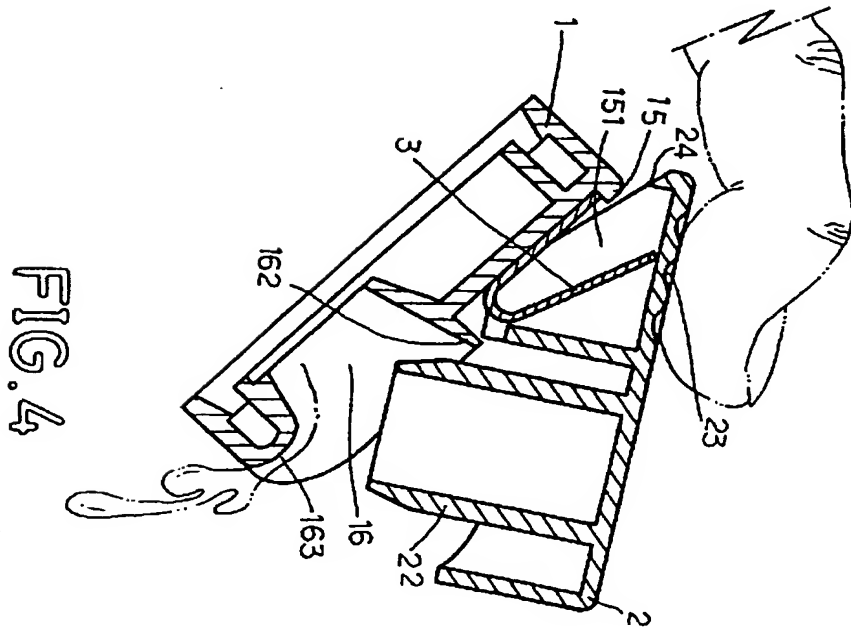
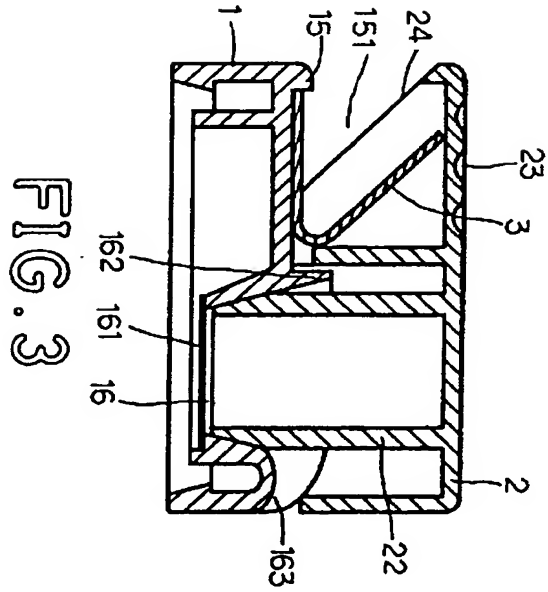


FIG. 2



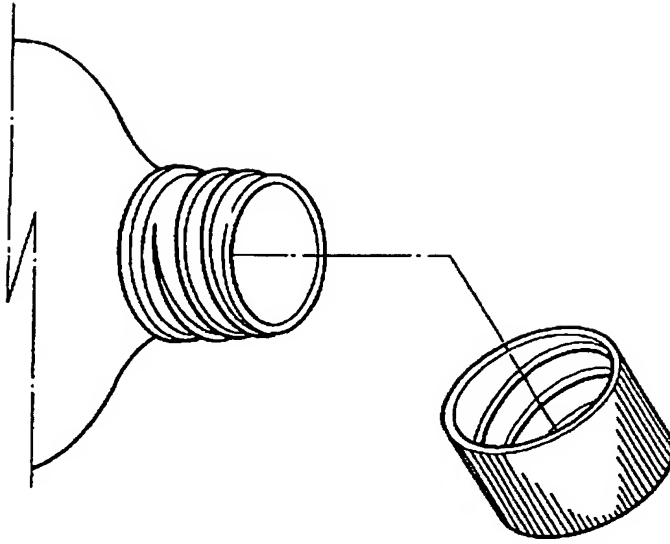


FIG. 5 (PRIOR ART)

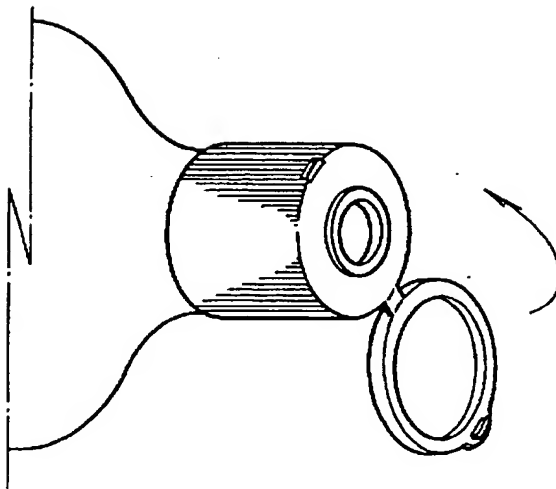


FIG. 6 (PRIOR ART)



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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 8817

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	EP-A-0 373 989 (L'OREAL) * column 6, line 12 - column 12, line 2 * * figures 1-16 *	1	B65D47/08
Y	DE-U-85 31 116 (TPP LEIBFAHRT) * page 8, line 10 - page 10, line 29; figures 1-8 *	1	
X		5	
A	DE-U-89 08 265 (BIELSTEINER VERSCHLUSSTECHNIK)	1	
X	* the whole document *	5	
A	US-A-4 776 501 (OSTROWSKY)	1	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B65D
X	* the whole document *	5	
A	EP-A-0 346 230 (GERVAIS-DANONE)	1	
X	* the whole document *	5	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 May 1995	Examiner Martens, L
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